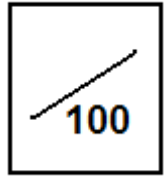


This assignment is worth 100 points! (Yikes!) Put time into it, and follow these instructions:

Any assignment submitted after class begins on Tuesday, 12/06/11, will be deducted 50 points.

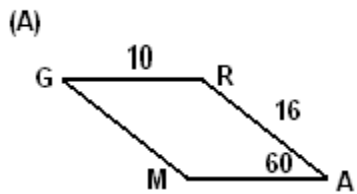
Any assignment submitted after class begins on Wednesday, 12/07/11, is an automatic 0 points.

Instructions:

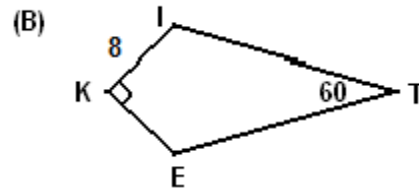


- I. It is to be done individually, so that you do not have "duplicate solutions" as someone else.
- II. You may, however, consult Mr. Hamilton for advice as needed.
- III. Please have **all work and pictures on separate sheets** and staple this sheet to the front. **(Be organized!)**
- IV. I must be able to follow what you do in each step, but if your work is clear, that should be sufficient. If you use right triangles (with trig), please draw them so I can see what you're doing. If you have questions as to whether something is acceptable, see me **before** the due date!

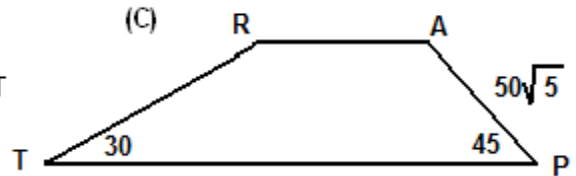
[#1] Find the **EXACT** area of each of the following figures: [9 Points]



Parallelogram GRAM

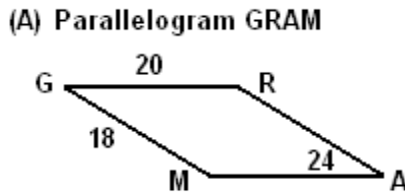


Kite KITE

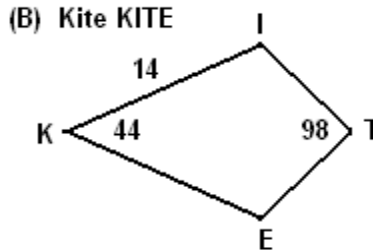


Trapezoid TRAP
TP = 300

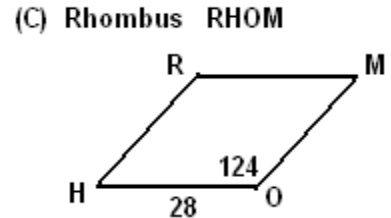
[#2] Find the area (rounded is fine) of each of the following figures: [9 Points]



(A) Parallelogram GRAM



(B) Kite KITE



(C) Rhombus RHOM

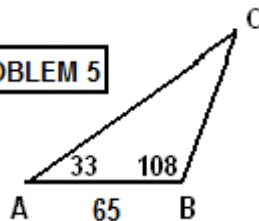
[#3] Given the side lengths, determine if a triangle can be formed (show work); if so, is it acute, right, or obtuse? [6 Points]

- (A) 10, 14, 12 (B) 15, 25, 20 (C) 15, 34, 12

[#4] How long after 7:55 PM until the hour and minute hands of a standard clock overlap? [5 Points]

[#5] Find the area of the triangle to the right (rounded is fine).

PROBLEM 5

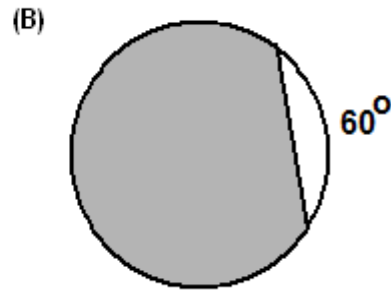
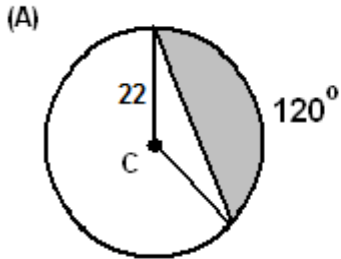


[6 Points]

[#6] Solve the following problems regarding arc length: [6 Points]

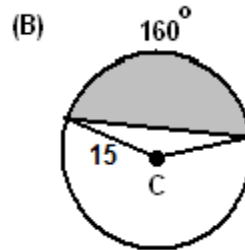
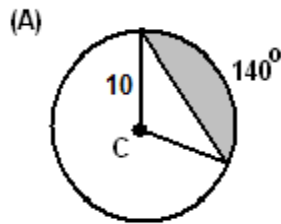
- (A) In a circle of radius 12, an arc has length 3.24. What is the measure of the included central angle?
- (B) In a circle of radius 20, what is the length of an arc of measure 112 degrees?
- (C) What is the radius of a circle if its central angle of 37 degrees makes an arc of length 117?

[#7] Find the amount of area in each shaded region. [10 Points]
 In these problems, your answers must be **EXACT**.
 (Simplified - in terms of π and with square roots and fractions, where applicable.)



Area of Circle = 100π

[#8] Find the amount of area in each shaded region. [10 Points]
 In these problems, your answers **should be rounded**.

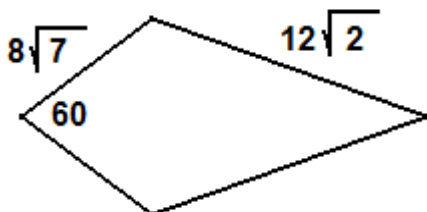


[#9] Find the **EXACT** area of each of the following: [8 Points]
You must have pictures to support your answers.

- (A) A regular hexagon with a side length of $24\sqrt{11}$
- (B) A regular octagon with a side length of $8\sqrt{51}$

[#10] Find the area of a regular dodecagon with side length 25. [5 Points]
 (Your answer should be rounded.)
You must have a picture to support your answer.

[#11] Find the **EXACT** area AND perimeter of the kite below. [6 Points]



[#12] A dog is tied outside so that its leash is anchored to the corner of a shed in the shape of a regular 20-gon with side length 80 feet. [6 Points]
 On how much area can the dog roam if its leash is 210 feet long?
 (You must have a picture to clearly support your calculations.)
Note: You do not have to draw a complete regular 20-gon; your picture can be partial but must justify your calculations.

[#13] A regular hexagon and an equilateral triangle have the same perimeter! [4 Points]
 (If that doesn't excite you, I don't know what would!)

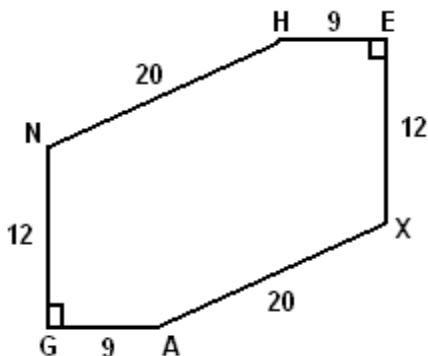
What is the ratio of the area of the hexagon to the area of the triangle?

That is, find the value of:
$$\frac{\text{Area of the Hexagon}}{\text{Area of the Triangle}}$$

[** Hint **] Let "x" be a side length of the regular hexagon, and go from there. Keep an eye out for those special right triangles!
There shouldn't be an "x" in your final answer; it should cancel out before you reach the end. You need to use a variable though, as you don't know the lengths of any of the sides.

[#14] In hexagon HEXAGN shown, opposite sides of the figure are parallel. [4 Points]
 Given the side lengths shown and the fact that HA = 25, find the area of the hexagon.

[** Hint **]
 Divide the figure into different regions and justify your work completely along the way.
 [For example, how do you *know* a figure is a rectangle in order to find its area?]

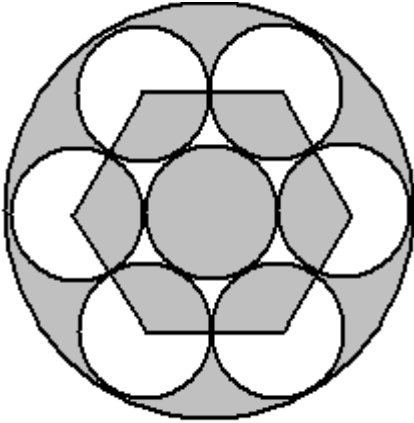


[#15]

Find the EXACT area shaded in the figure below (it is a regular hexagon inside).

YOU MAY SOLVE THIS PROBLEM HERE. SHOW / JUSTIFY YOUR WORK!!

[6 Points]



Area of Big (Overall) Circle = 2304π

All small circles are the same size and are tangent to each other as well as the overall circle.

(In other words, everything fits in perfectly, right up against each other item.)

The regular hexagon in the center has its vertices at the centers of the white circles.